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Forest Insect and Disease Management

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BIOLOGICAL
EVALUATION R2-77-11

MOUNTAIN PINE BEETLE

East Long Creek Timber Sale
Wind River Ranger District
Shoshone National Forest

NOVEMBER 1977

Rocky Mountain Region

U.S. Department of Agriculture Forest Service

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NOVEMBER 1977

PREPARED BY:

Vernon L. M. Creasap
Entomologist

APPROVED BY:

G. L. DOWNING
Staff Director
Forest Insect and Disease Management

F. A. DORRELL
Deputy Regional Forester
State and Private Forestry

Forest Insect and Disease Management
State and Private Forestry
Rocky Mountain Region
USDA Forest Service
11177 W. 8th Avenue
Lakewood, Colorado 80225

INTRODUCTION

Personnel from Forest Insect and Disease Management recently visited the proposed East Long Creek Timber Sale on request from the Shoshone National Forest Supervisor's office and the Wind River Ranger District. The East Long Creek Timber Sale is scheduled to sell in 1981. District personnel noticed mountain pine beetle activity within the proposed timber sale area and requested an evaluation of the infestation. An evaluation was felt necessary in order to determine whether or not to move the selling date up in order to prevent further losses from the mountain pine beetle. The present mountain pine beetle infestation appears to be 3 or 4 years old. There is past history of mountain pine beetle treatment of this area about 15 years ago.

TECHNICAL INFORMATION

CAUSAL AGENT: *Dendroctonus ponderosae* Hopkins, mountain pine beetle

HOSTS: *Pinus contorta* var. *latifolia* Douglas, lodgepole pine
P. flexilus Douglas, limber pine

LIFE HISTORY: The mountain pine beetle has one generation per year. Adults attack trees from July through August by boring through the bark to the cambium. The females then tunnel upward for 12 inches to 30 inches (these tunnels are called egg galleries). The females lay eggs in individual niches along each side of the gallery which is then packed with frass. After hatching, the larvae feed in individual channels (larval galleries) at right angles to the egg gallery in the phloem. The insect overwinters in the larval stage. In the spring, when the larvae are fully developed, they excavate an oval chamber at the end of the larval gallery and pupate. Finally, mature adults emerge from the chamber by boring through the outer bark and fly to attack new trees, completing the generation.

METHODS

One-half-chain wide by 20- to 35-chain long cruise strips were run to obtain a ratio of 1976- to 1977-infested trees. Variable point plots were taken at five-chain intervals to obtain stand composition data. Data were taken to include a measure of the incidence of mountain pine beetle infested trees, and those killed by other agents (primarily Comandra blister rust, *Cronartium comandrae* Peck.). Dwarf mistletoe was noted to be very prevalent within the stand.

RESULTS AND DISCUSSION

The East Long Creek Timber Sale is primarily contained within Sec. 17, 18, 19, and 20, T. 43 N., R. 108 W., and Sec. 23 and 24, T. 43 N., R. 109 W. Sections 17 thru 20 form part of a contiguous stand. Sections 23 and 24 are separated from the rest of the sale area by the Middle Fork Long Creek Drainage. The major portion of the mountain pine beetle population appears to be in sections 19 and 20. Sections 17 and 18 appear to have fewer infested lodgepole pines. Sections 23 and 24 appear to have very few infested trees. The overall build-up ratio for the East Long Creek Timber Sale is 1 : 1 (Table 3). The 1977 losses to mountain pine beetle should be the same as the losses for 1976. From an aerial survey of the area, the beetle loss appears to be almost entirely contained within the sale area.

Of the total loss approximately 11% of the lodgepole pine basal area has been lost to the mountain pine beetle (Table 1). The average dbh of the live stand is also being reduced (Table 2). Some spruce and fir mortality was noticed in the higher elevations. Although an exact determination of the cause was not made, it appears that *Dryocetes* sp. is the agent.

RECOMMENDATIONS

The East Long Creek Timber Sale should be cut as soon as feasible in order to prevent further losses to the mountain pine beetle, Sections 23 and 24 do not show as high a potential for mortality from mountain pine beetle as the other sections involved. These two sections may be cut as originally planned. The rest of the sale area should not be divided further, since it is part of a

contiguous stand showing potential for additional loss. Further division of the timber sale would reduce the effectiveness of the mountain pine beetle control effort. Marking should be done between beetle flight and harvest. Allowing beetle flight between marking and harvest will mean that the area will have to be remarked in order to salvage the newly infested trees.

Land managers are encouraged to incorporate recommendations from applicable publications in their management plans. Two publications which can be useful to the management of lodgepole pine stands are:

AMMAN, G. D., M. D. McGREGOR, D. B. CAHILL, and W. H. KLEIN. 1977. Guidelines for reducing lodgepole pine beetle in unmanaged stands in the Rocky Mountains. USDA For. Serv. INT. Tech. Rep. INT-36. 19 pp.

BROWN, D. B. 1977. Management guidelines for lodgepole pine stands infected with Comandra blister rust and dwarf mistletoe. USDA For. Serv. State and Private Forestry. Rocky Mtn. Region. Tech. Rep. R2-9. 21 pp.

TABLE 1 BASAL AREA SUMMARY

Area	All Trees	All LPP	Live LPP	1977 LPP Infested	1976 LPP Infested	Older LPP Infested	Other Dead LPP	# Plots
Long Creek North	122	75	64	-	1	4	11	20
Long Creek Middle	134	81	60	1	-	11	17	20
Long Creek South [1/]	77	65 (7)	46 (6)	1 (0.5)	4 (13)	5 (17)	9 (0.3)	35
Long Creek West	84	81	74	0.3	0.3	3	3	34
AVERAGE	98	75	61	1	2	5	6	109

[1/] Numbers in parentheses indicate basal area of Limber Pine in respective categories

TABLE 2 AVERAGE DBH SUMMARY

Area	All Trees	All LPP	Live LPP	1977 LPP	1976 LPP	Older LPP	Other LPP
Long Creek North	7.86	7.89	7.82	13.00	13.00	9.49	9.45
Long Creek Middle	8.39	8.17	7.94	15.75	16.00	10.17	10.23
Long Creek South [1/]	8.12	8.70 (9.20)	8.19 (9.08)	10.53 (11.00)	11.18	10.80	7.51 (24.00)
Long Creek West	7.78	7.66	7.64	16.60	12.20	9.25	9.25
AVERAGE	8.23	8.19	7.88	13.97	13.09	10.23	9.37

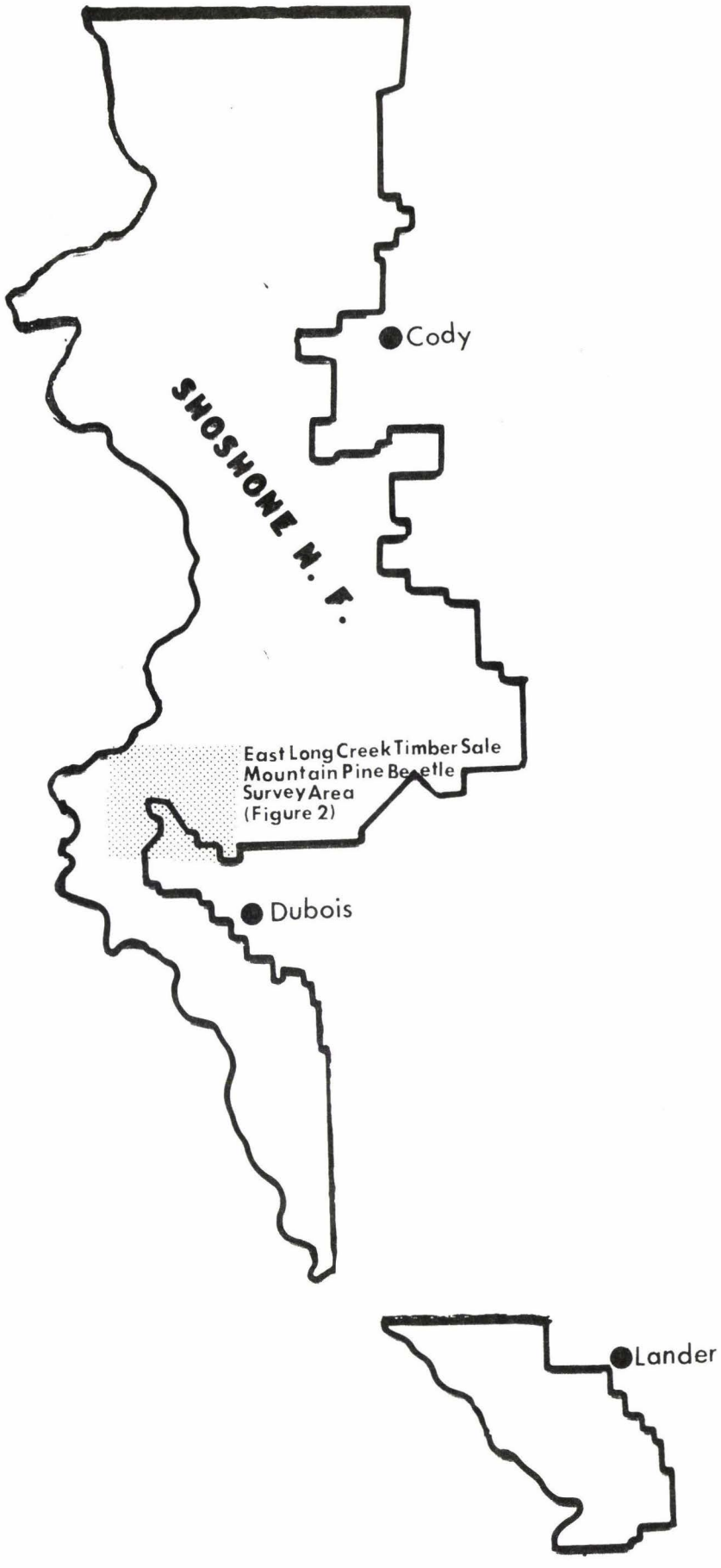
[1/] Numbers in parentheses indicate average dbh of Limber Pine in respective categories

TABLE 3 STRIP CRUISE SUMMARY

Area	Strip Length Miles	Number of Plots	1977 Infested	1976 Infested
Long Creek North	1.25	20	2	2
Long Creek Middle	1.25	20	2	1
Long Creek South	2.00	35	31	34
Long Creek West	2.00	34	1	1
TOTAL	6.50	109	36	38
AVERAGE		Build-up ratio	1 : 0.95	

FIGURE 1

MOUNTAIN PINE BEETLE SURVEY AREA SHOSHONE NATIONAL FOREST



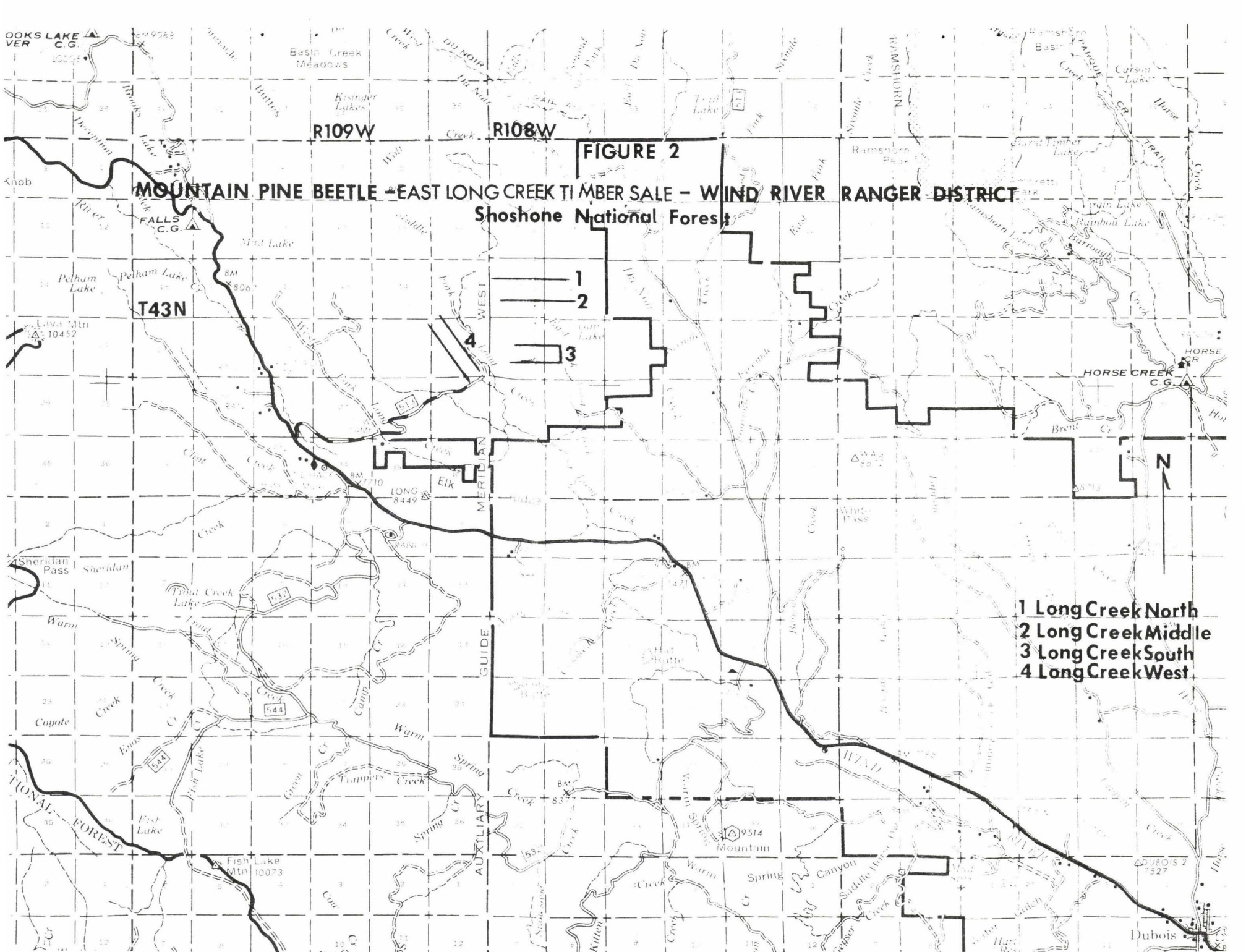


FIGURE 2

MOUNTAIN PINE BEETLE – EAST LONG CREEK TIMBER SALE – WIND RIVER RANGER DISTRICT

Shoshone National Forest